



• SEM picture of SiC (at 250x magnification)  
Sample A



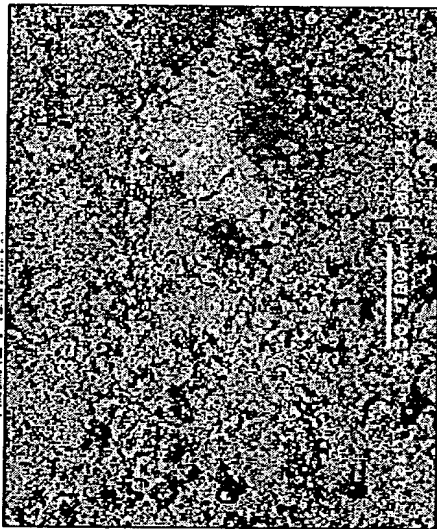
• Average particle size 0.36  $\mu\text{m}$   
• Specific surface area 44.0  $\text{m}^2/\text{g}$   
• Amount of agglomerated particles 63.4 %

Sample B



← 0.29  $\mu\text{m}$   
← 32.6  $\text{m}^2/\text{g}$   
← 43.4 %

Sample C (Comparative)



← 0.34  $\mu\text{m}$   
← 27.1  $\text{m}^2/\text{g}$   
← 10  $\geq$  %

EXHIBIT A



Docket No.: 053673-0015

**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of	:	Customer Number: 20277
Yasushi NAKANISHI, et al.	:	Confirmation Number: 3726
Application No.: 10/694,012	:	Group Art Unit: 1756
Filed: October 28, 2003	:	Examiner: CHAPMAN, Mark A.
For: ELECTROSTATIC IMAGE DEVELOPER AND IMAGE-FORMING PROCESS	:	

**Declaration Under 37 C.F.R. § 1.132**

Mail Stop Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Yasushi Nakanishi declare as follows:

- 1 I am employed in the EST Technical Department of Toyo Ink Mfg. Co. Ltd.
- 2 I am a coinventor of U.S. Patent Application Serial No. 10/694,012

**ELECTROSTATIC IMAGE DEVELOPER AND IMAGE-FORMING PROCESS** filed October 28, 2003.

3. I have read and am familiar with the disclosure of the above-captioned patent application. I have read and am familiar with the disclosure of Imai et al., U. S. Patent No. 4,702,986.

4. Silicon carbide powder samples SiC-1, SiC-2, SiC-3, and SiC-4, having the properties and composition as disclosed in Table 1 on page 2 of the attached Experimental Report (Appendix 1) dated October 31, 2005, were used to prepare the positively charged

Application No.: 10/694,012

magnetic developers as disclosed in Table 2 of the Experimental Report. A toner powder was prepared according to the procedures of Example 1 in U.S. Patent Application Ser. No. 10/694,012, and the positively charged magnetic developer of Table 2, were obtained by respectively adding to the toner powder 0.3% by weight of silica powder treated by dichloromethylsilane and 1.0% by weight of silicon carbide powder.

5. Imaging tests were performed using the same test conditions as Example 1 of U.S. Patent Application Ser. No. 10/694,012 by using a copy machine GP-605 manufactured by Canon, Inc., wherein an amorphous silicon photoreceptor drum (A) having 67.5% of drum surface Si-O content was loaded, at room environmental conditions of 23 °C and 50% RH.

6. The imaging test results of the positively charged magnetic developers are disclosed in Table 3 on page 3 of the Experimental Report dated October 31, 2005.

7. I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issuing therefrom.

22/Nov/2005  
Date

中西 靖  
Yasushi Nakanishi



## APPENDIX 1

### Experimental Report

#### **The Place of Experiment**

EST Technical Department Experiment Room

Toyo Ink Mfg. Co., Ltd

Kawagoe-shi, Saitama, Japan

#### **The Date of Experiment**

23rd March, 2005

#### **Experimenter**

Yasushi Nakanishi

EST Technical Department

Toyo Ink Mfg. Co., Ltd.

Dated this 31<sup>st</sup> the day of October, 2005

中西 靖

Yasushi Nakanishi

## 1 . Object of Experiment

An object of this experiment is to demonstrate the superiority of the invention of U.S. Patent Application No.10/694,012 by comparing image characteristics through imaging tests using electrostatic image developers, each of which has a different amount of agglomerated particles in Silicone Carbide powder.

## 2 . Experiment

### (1) Silicon Carbide powder samples to be used in this experiment

Silicon Carbide powder samples to be used in this experiment were shown in Table 1 below.

(Table 1) Silicon Carbide powder samples

Silicon Carbide powder sample No.	D50 (micron meter)	Specific Surface Area (m <sup>2</sup> /g)	Amount of agglomerated particles in SiC powder (%)	Fe (wt %)	Al (wt%)
SiC-1	0.25	41.7	58.5	0.31	0.42
SiC-2	1.42	12.1	12.7	0.16	0.17
SiC-3	0.16	52.6	64.4	0.50	0.66
SiC-4	1.97	6.3	8.7	0.13	0.09

### (2) Preparation of a toner powder and magnetic developers used in this experiment

A toner powder was prepared according to the procedures of Example 1 in U.S. Patent Application No.10/694,012, and positively chargeable magnetic developers (Magnetic Toners 1 to 4) were obtained respectively by adding to the toner powder 0.3% part by weight of Silica powder treated by dichlorodimethylsilane and 1.0% part by weight of Silicon Carbide powder sample above (SiC-1,-2,-3 or -4).

(Table 2) Positively Chargeable Magnetic Developers (Magnetic Toners 1 to 4)

Toner Sample No.	Silicon Carbide powder sample	Amount of agglomerated particles in SiC powder (%)
Magnetic Toner 1	SiC-1	58.5
Magnetic Toner 2	SiC-2	12.7
Magnetic Toner 3	SiC-3	64.4
Magnetic Toner 4	SiC-4	8.7

### (3) Imaging test and its result

Regarding four magnetic toner samples above, Imaging tests were performed in the same test condition as that of Example 1 of U.S. Patent Application No.10/694,012 by using a copy machine GP-605 manufactured by Canon Inc., wherein the amorphous silicon photoreceptor drum (A) having 67.5% of drum surface Si-O content was loaded, at room environmental condition (23 degrees centigrade and 50% RH.). Results are shown in Table 3.

(Table 3) Imaging test result of Positively Chargeable Magnetic Developers

	Copy count	Amount of agglomerated particles in SiC powder (%)	Image Density		Fog density		Evaluation Results
			(Initial)	(End)	(Initial)	(End)	
Magnetic Toner 1	100000	58.5	1.37	1.37	0.3	0.2	Good Imaging quality after 100000 copies
Magnetic Toner 2	100000	12.7	1.36	1.37	0.4	0.5	Good Imaging quality after 100000 copies
Magnetic Toner 3	50000	64.4	1.37	1.38	0.4	0.7	Cleaning failure and Black streaks was observed after 50000 copies.
Magnetic Toner 4	70000	8.7	1.35	1.35	0.5	0.6	Insufficient Abrasion and White spot was detected after 70000 copies.

### 3. Conclusion

As shown in Table 3, Magnetic Toners 1 and 2 have good imaging qualities on the imaging test but Magnetic Toner 3 and 4 have low imaging qualities on the imaging test.

This result supports that the excellent development are performed by the use of Silicon Carbide fine powder wherein the average primary particle size thereof is between 0.2 micron meter and 1.5 micron meters, the specific surface area thereof is between 10 m<sup>2</sup>/g and 50 m<sup>2</sup>/g, and the amount of agglomerated particles therein is between 10% and 60%, that is Silicon Carbide fine powder used in the invention of U.S. Patent Application No.10/694,012.